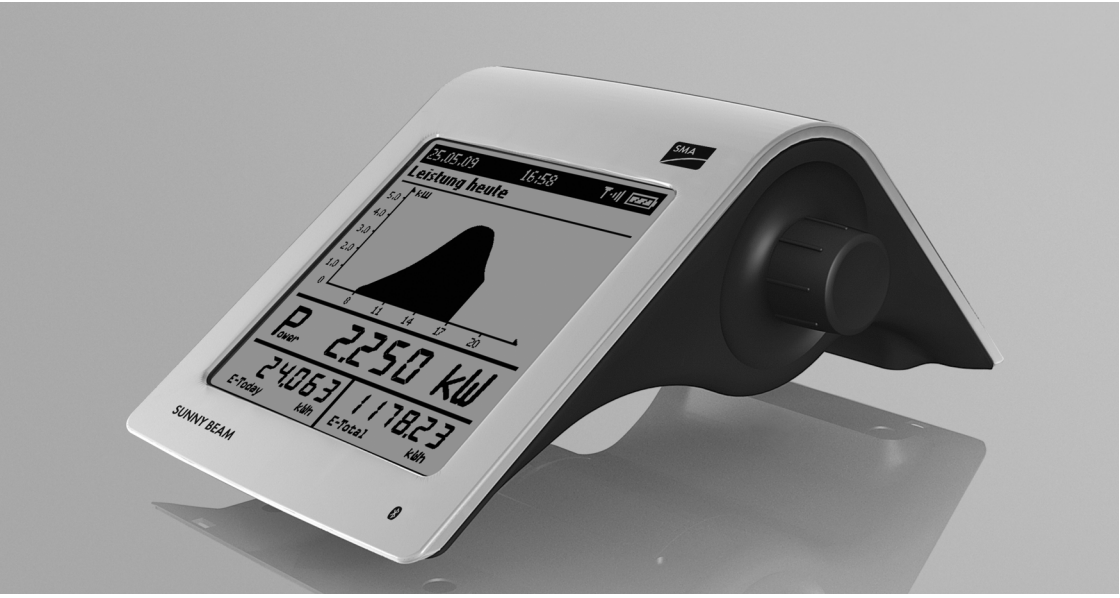
Solar data technology

SUNNY BEAM with *Bluetooth*® Wireless Technology

User Manual



BeamBT-BEN091910 | 98-0012810 | Version 1.0

EN

Table of Contents

1 Notes on this Manual. 8
1.1 Validity 8
1.2 Additional Information 8
1.3 Symbols Used 9
1.4 Terminology 9
2 Sunny Beam with *Bluetooth* *10*
2.1 Field of application 10
2.2 Functions 10
3 Safety 12
3.1 Appropriate Usage 12
3.2 Safety Instructions 13
4 Unpacking. 14
4.1 Packing List 14
4.2 Identifying the Sunny Beam 14

5 Commissioning 15
5.1 Sunny Beam controls 15
5.2 Initial settings. 16
6 Operation 30
6.1 Display 30
6.1.1 Switching on the display/calling up the main menu 31
6.2 Menu 32
6.3 Chart view. 33
6.3.1 Calling up the chart Complete PV system 34
6.3.2 Calling up the chart No. of inverters. 36
6.4 Power and energy display 38
6.5 Symbols in the chart view 39
6.5.1 Symbol for the connection quality. 40
6.5.2 Battery symbol/Charging the batteries 41
6.5.3 Fault and warning symbol. 42
6.6 Calling up events 43
6.7 Sunny Beam alarms 45
6.7.1 Set/disable alarm for faults. 46

6.8 Display settings 47
6.8.1 Changing the contrast 47
6.8.2 Changing the display switch-off 47
6.8.3 Setting the coefficients of balance 48
6.9 Data query 49
6.9.1 Changing the data query frequency 49
6.9.2 Changing the live query duration 50
6.9.3 Disabling the Overnight Shutdown 51
6.10 Service functions 52
6.10.1 Checking the connection quality 52
6.10.2 Accessing device information 54
6.10.3 Performing an update 55
6.10.4 Resetting the Sunny Beam 57
6.11 System settings 58
6.11.1 Calling up the list of connected devices 58
6.11.2 Entering the system password 59
6.11.3 Repeating the system search 60
6.11.4 Change device name 61
6.11.5 Adjusting the energy meter when switching devices 62
6.11.6 Setting the maximum plant power in kWp 62

6.12 Country settings 64
6.12.1 Changing the language 65
6.12.2 Changing the currency 65
6.12.3 Changing the unit of CO_2 avoided. 65
6.12.4 Changing the decimal separator 66
6.12.5 Changing the date format. 66
6.12.6 Changing the timestamp format 66
6.13 Changing the date and time. 67
6.14 Activating/deactivating daylight saving time 67
6.15 Changing the time zone 68
7 Managing system data 69
7.1 System requirements 70
7.2 Copying system data to the computer 70
7.2.1 CSV format 71
8 Menu overview 72
9 Maintenance and Care 73
9.1 Maintenance. 73
9.1.1 Replacing the batteries 73

9.2 Care 75

10 Decommissioning 76

10.1 Decommissioning the Sunny Beam 76

10.2 Disposing of the Sunny Beam 76

10.3 Disposing of the batteries 76

11 Troubleshooting 77

12 Technical Data 81

13 Accessories 83

13.1 USB plug-in power supply 83

13.2 Replacement batteries. 83

14 Contact 84

1 Notes on this Manual

1.1 Validity

This manual is valid for the Sunny Beam firmware version 1.0 and later.

1.2 Additional Information

You can find further information on the following subjects in the 'Downloads' area of www.SMA.de/en.

- SMA *Bluetooth* Wireless Technology
- CO_2 factor

1.3 Symbols Used

The following types of safety precautions and general information appear in this document as described below.

ATTENTION!

ATTENTION indicates a situation that can result in property damage if not avoided.

Information

Information provides tips that are valuable for the optimal installation and operation of your product.

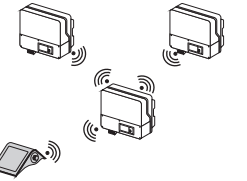
1.4 Terminology

This user manual uses the terminology indicated in the following table.

Type	Example of terminology
Main menu item	Select "Settings".
Submenu item	Select "Settings > Date".

2 Sunny Beam with *Bluetooth*

2.1 Field of application



Sunny Beam is a communication device which requests, displays and saves data from up to 12 inverters in a *Bluetooth* PV system. Communication with the inverters takes place via *Bluetooth*. The transmitting power corresponds to *Bluetooth* Class 1.

Sunny Beam only supports inverters from SMA Solar Technology that are fitted with *Bluetooth*. Most SMA Solar Technology inverters that do not have integrated *Bluetooth* can be retrofitted with the SMA *Bluetooth* piggy-back.

2.2 Functions

- Processing data from up to 12 inverters
- *Bluetooth connection to the inverters*
- Range of up to 100 m in the open with direct visual contact
- Supports inverters with Bluetooth from SMA Solar Technology:
  - Inverters with integrated *Bluetooth* for software package 2.06 and later.
  - Inverters with integrated SMA *Bluetooth* piggy-back
- Display of errors and warnings on the integrated display
- Acoustic alarms to indicate errors in the PV system
- Connection to the computer via the USB connection cable (max. 3 m cable length)

- Saves the system data in CSV format for at least 100 days as well as up to 25 errors and warnings. The storage volume depends on the number of inverters. If the memory is full, old system data will be overwritten.
- Graphical display of the following data for the whole system and for each inverter on the integrated display:
  - Performance today / Performance yesterday
  - Energy for the last 31 days / Energy for the last 12 months
  - Specific annual yield
  - Allowance for the current day and total allowance so far
  - CO_2 emissions avoided for the present day and total present CO_2 emissions avoided.
- Display of the following values for the entire plant and for individual inverters:
  - Present AC power
  - Daily yield (E-Today)
  - Energy yield yesterday (E-Yday) when calling up the chart "Power yesterday"
  - Total energy yield (E-Total)

3 Safety

3.1 Appropriate Usage

Sunny Beam is only suitable for indoor use. The ambient temperature must be between 0 °C and +40 °C. The power supply for Sunny Beam may only be provided by rechargeable nickel-metal hydride batteries (NiMH), type Mignon (AA) with low self-discharge, e.g. Eneloop batteries.

Sunny Beam is only suitable for use with original accessories from SMA Solar Technology or accessories recommended by SMA Solar Technology.

The Sunny Beam data cannot be used for billing purposes.

Data collected by Sunny Beam regarding the power generated by your PV system may deviate from the electricity meter.

3.2 Safety Instructions

Please follow all operating and safety precautions in this manual. Failure to follow these instructions may result in damage to the device and risk of personal injuries.

WARNING!

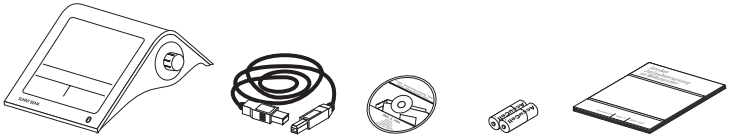
Damage to Sunny Beam caused by leaking batteries.

Batteries of the wrong type may leak into the Sunny Beam and damage the device.

- Only use rechargeable nickel-metal hydride batteries (NiMH), type Mignon (AA) with low self-discharge, e.g. Eneloop batteries (see Chapter 13 "Accessories" (page 83)).

4 Unpacking

4.1 Packing List



A B C D E

Position	Quantity	Name
A	1	Sunny Beam with *Bluetooth*
B	1	USB connection cable for connection to the computer
C	1	Software DVD
D	2	Nickel-metal hydride batteries (NiMH), type Mignon (AA) with low self-discharge.
E	1	Manual

4.2 Identifying the Sunny Beam

Type plate

You can identify the Sunny Beam using the type plate. The type plate is located on the lower side of the Sunny Beam.

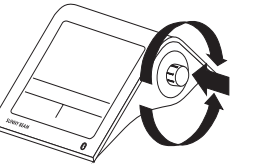
Firmware version

You can check the firmware version of the Sunny Beam in the Menu "Service > Diagnostics > Device information > Sunny Beam".

5 Commissioning

5.1 Sunny Beam controls

The Sunny Beam is operated using the push button that can be turned and pressed.



Moving the selection frame

The selection frame (see fig. on the right) indicates which menu item is currently selected. By turning the push button, you can move the selection frame to the next menu item or the previous menu item.

Selecting a menu item, setting values

When the selection frame is placed over a menu item, you may open the menu item by pressing the push button. When you have opened a menu item with a colon, you can set the values by turning the button.

Selecting a button

When the selection frame is placed over a button (see example in the fig. on the right), the button becomes dark. The selection frame is not displayed.

Navigating backwards in the menu

Using the arrow icon you can go backwards in the menu until the main menu is displayed. By selecting the house icon, you will go straight to the main menu.

5.2 Initial settings

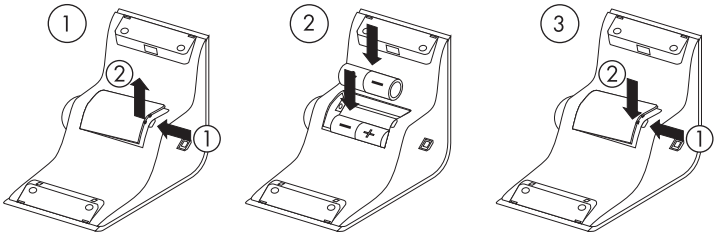
Commissioning of a *Bluetooth* PV system with only 1 master at all times.

A *Bluetooth* PV system must only be commissioned with 1 master (e.g. Sunny Beam with *Bluetooth*, Sunny Explorer). As soon as the *Bluetooth* network is up and running, you can integrate further masters into the *Bluetooth* network.

The first steps are described in detail, so that you can familiarize yourself with the controls of Sunny Beam.

Sunny Beam will guide you through the commissioning procedure. If a fault occurs during commissioning, you can restart commissioning by pressing the push button for about 10 seconds, until the SMA logo is displayed.

1. Place the included batteries in Sunny Beam.

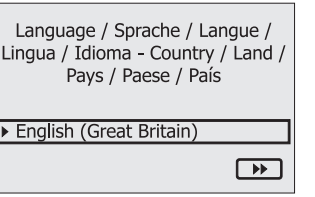


2. Press the button.

☑ The start screen appears.

3. Press the button.

☑ The page for setting the language appears. This page appears automatically after 10 seconds.

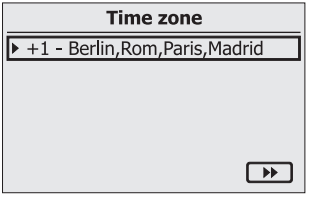


Setting the language and the country

4. If you want to change the selected language and country, press the button.
   ☑ The background of the selected language and country becomes dark.
5. Turn the button until the required language and country are displayed.
6. Press the button.
   ☑ No items remain dark. The language and country have ben set.
7. Move the selection frame to the button ">>" (next) by turning the button.

☑ The button becomes dark.

8. Press the knob.
   ☑ The page for setting the time zone appears.



Setting the time zone

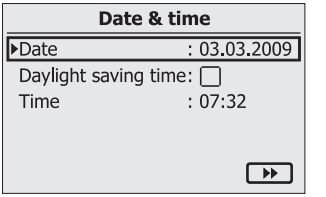
Inverters with SMA *Bluetooth* piggy-back

If you use inverters with SMA *Bluetooth* piggy-backs, you must set the correct values for date, daylight saving time, time and time zone. If you reset the time after commissioning, the data associated with the time difference will be deleted from the inverter. Please note that the time may also be reset if you change the settings for time zone or daylight saving time.

Confirming the time settings

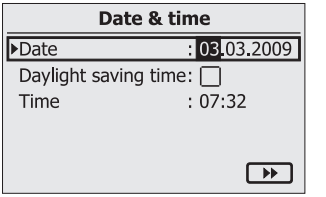
Due to the extensive time management in your PV system, the first attempt to change the time settings may not be successful, if, for example, time has already been set using Sunny Explorer. Check the time settings again after commissioning and correct them, if required.

9. To change the time zone, press the knob.
   ☑ The time zone will become dark.
10. Turn the button until the required time zone is displayed.
11. Press the knopf.
    ☑ No items remain dark. The time zone has been set.
12. Move the selection frame to the button ">>" by turning the button.
    ☑ The button becomes dark.
13. Press the button.
    ☑ The page for setting the date and time appears.



Setting the date

14. Press the button.
    ☑ The first adjustable digits become dark.

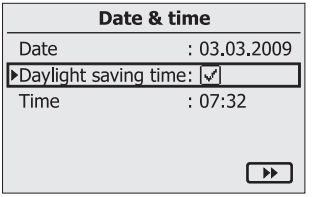


15. Turn the button until the required value is shown.
16. Press the button and repeat the steps until no digits are dark.

To change incorrect values, press the push button until the value that you need to change becomes dark.

☑ The date has been set.

Activating daylight saving time

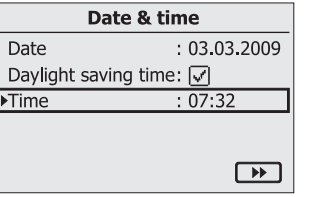


17. To activate daylight saving time, move the selection frame to "Daylight saving time:" by turning the button, then press the button to tick the box.

    ☑ Daylight saving time is activated.

Setting the time

18. Move the selection frame to "Time:" by turning the button.



19. Press the button.

    ☑ The first adjustable digits become dark.

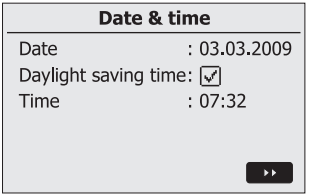
20. Turn the button until the required value is shown.

21. Press the button and repeat the steps until no digits are dark.

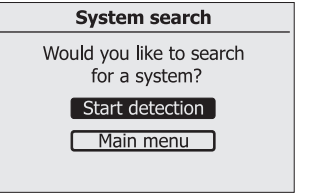
    The time will start counting again as soon as no digits in the menu item "Time:" are dark.

    ☑ Time has been set.

22. Move the selection frame to the button ">>" by turning the button.
    ☑ The button becomes dark.



23. Press the button.
    ☑ The page for searching for systems appears.



Determining a free NetID

This section explains what a NetID is and how you determine a free NetID before commissioning your PV system.

NetID

The NetID serves to distinguish PV systems with SMA *Bluetooth* in close proximity from one another. SMA Solar Technology *Bluetooth* devices recognize your *Bluetooth* PV System via an assigned NetID.

The NetID can be a number from 1 to 9 or a letter from A to F. NetID 1 is not possible for Sunny Beam.

You can select one of the NetIDs for your *Bluetooth* PV system, if this NetID is not already used by another PV system with SMA *Bluetooth* in the vicinity.

To check if there is another PV system with SMA *Bluetooth* within the radio range of your device and which NetID it uses, carry out a system search with Sunny Beam on the installation site of each of the devices in your *Bluetooth* PV system.

Alternatively, you can also determine a free NetID using a laptop with *Bluetooth* and the program Sunny Explorer from SMA Solar Technology. For more information on how to do this, please refer to the Sunny Explorer Help. You can download the program Sunny Explorer from www.SMA.de/en free of charge.

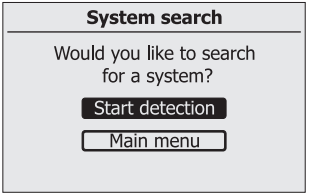
The following table lists the functions of the NetIDs. NetID 0 and NetID 1 have special functions. NetID 1 is the default setting for inverters and the SMA *Bluetooth* repeater when delivered. Sunny Beam cannot detect any devices with the NetID set to 1.

NetID	Function
0	*Bluetooth* is switched off.
1 (Condition upon delivery)	*Bluetooth* is switched on. The inverter or the SMA *Bluetooth* repeater can only connect to a maximum of 2 computers with Sunny Explorer from SMA Solar Technology. A connection to the Sunny Beam is not possible.
2 - F	*Bluetooth* is switched on. The inverter or the SMA *Bluetooth* repeater can interlink with all SMA *Bluetooth* products with the same NetID.

For the inverters and the SMA *Bluetooth* repeaters, the NetID is set using rotary switches. During commissioning, the Sunny Beam will display the NetIDs of all PV systems with SMA *Bluetooth* which are within its radio range. You may then choose one of the displayed NetIDs for your own PV system.

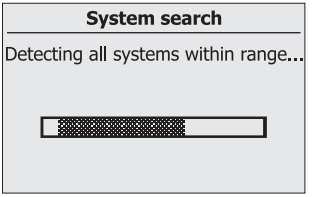
Leave the preset NetID 1 for the devices. Start by determining a free NetID, as follows.

24. Place the Sunny Beam near a device in your *Bluetooth* PV system.
25. To start the system search, the button "Start detection" must be dark. Press this button.



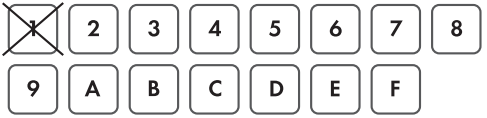
☑ The system search will begin.

☑ The Sunny Beam detects all *Bluetooth* PV systems within range and lists the NetIDs of the detected *Bluetooth* PV systems. In the list, the NetIDs are sorted according to connection quality; the NetID with the best connection quality is placed at the top. The listed NetIDs are already in use on *Bluetooth* PV systems in the vicinity. You may not use these NetIDs.



– If the Sunny Beam does not list any NetIDs, there are no *Bluetooth* PV systems within the radio range of the Sunny Beam. All NetIDs are free.

26. Note down the NetIDs already in use, or cross them out in the following illustration.
27. Repeat the system search with the Sunny Beam on each device in the PV system and at the desired installation site of the Sunny Beam itself. Note down the NetIDs already in use, or cross them out in the following illustration.



Sunny Beam cannot detect any devices with the NetID set to 1. Therefore, NetID 1 has already been crossed out in this illustration.

28. Once the system search has been carried out on all the devices, choose a NetID for your PV system which was not displayed by the Sunny Beam.

☑ The free NetID is determined.

29. Set the free NetID on the inverters and available SMA *Bluetooth* repeaters, as described in the respective manual.
30. Commission the inverters and available SMA *Bluetooth* repeaters as described in the respective manual.

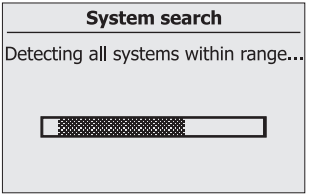
Search for your own *Bluetooth* PV system

Do not start the Sunny Beam again until you have set the free NetID on the inverters and available SMA *Bluetooth* repeaters and have commissioned these devices.

31. Set up the Sunny Beam at its intended installation site.
32. To search for your *Bluetooth* PV systems, choose "Repeat search".

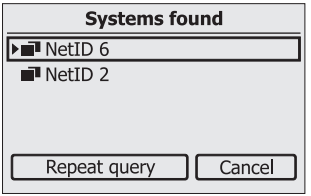
    You can also start the system search via the menu "Settings > PV system > New plant search".

    ☑ The system search will begin.



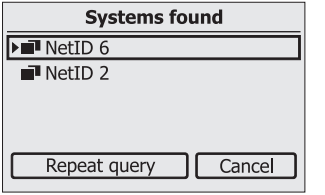
    ☑ The Sunny Beam detects all *Bluetooth* PV systems within range and lists the NetIDs of the detected *Bluetooth* PV systems.

    – If the Sunny Beam does not list the NetID of your *Bluetooth* PV system, please refer to Chapter 11 "Troubleshooting" (page 77).

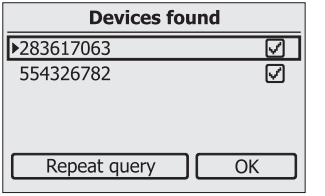


Setting the NetID for your own *Bluetooth* PV system

33. Move the selection frame to the NetID of your own *Bluetooth* PV system by turning the button.



34. Press the button.
    ☑ The Sunny Beam establishes a connection to your *Bluetooth* PV system.
    ☑ The Sunny Beam then lists the serial numbers of the detected inverters.
    – If not all inverters of your *Bluetooth* PV systems are listed, or if inverters from other system are listed, please refer to Chapter 11 "Troubleshooting" (page *77*).



Selecting the required inverters (only applies when more than 12 inverters are available)

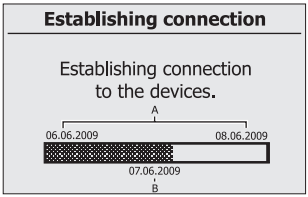
The Sunny Beam can only manage a maximum of 12 inverters. If your *Bluetooth* PV system comprises more than 12 inverters, you must select the 12 inverters that you want the Sunny Beam to manage.

35. Press the button to select the inverters that are to be managed by the Sunny Beam.

☑	selected
☐	not selected

Establish connection to the devices

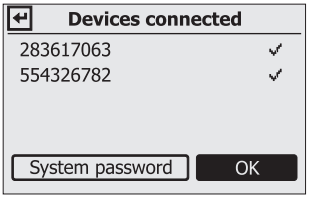
36. Move the selection frame to "OK" by turning the button.
    ☑ The field "OK" becomes dark.
37. Press the button.
    ☑ The Sunny Beam establishes the connection to the selected inverters and retrieves the data.



A	The start date and end date of the time period from which the Sunny Beam will retrieve data.
B	The date from which the Sunny Beam is retrieving data right now.

If it is the first time that you have established a connection to your PV system with the Sunny Beam, the Sunny Beam will retrieve all the data from the inverters, starting from the day before yesterday. If you are detecting a PV system again, the Sunny Beam will retrieve data from the days that have been saved in the inverter since the last retrieval.

☑ The Sunny Beam then lists the serial numbers of the connected inverters.



Inverters for which the system password is still set on delivery, are indicated by a check mark (✓).

Inverters for which another system password is set are marked with a padlock (🔒) and must be released using the correct system password. Inverters that temporarily cannot establish a connection to the Sunny Beam are also marked with a padlock.

The Sunny Beam can only manage data from inverters whose system password has been correctly entered in the Sunny Beam.

Changing system password with Sunny Explorer

The system password protects your *Bluetooth* PV system from unauthorized access to your device. All devices in a *Bluetooth* PV system must have the same system password.

The Sunny Beam can only manage data from inverters whose system password has been correctly entered in the Sunny Beam. The system password can only be changed with a computer with *Bluetooth* and the program Sunny Explorer from SMA Solar Technology. You can download the program Sunny Explorer from www.SMA.de/en free of charge.

System password at delivery

At delivery the system password for users is 0000.

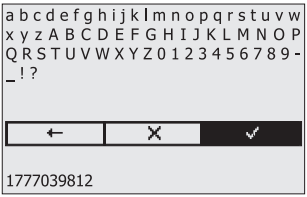
38. Change the system password for inverters using the program Sunny Explorer, as described in the Sunny Explorer Help. Notify the system owner of the new system password for users.

Enter the new system password in the Sunny Beam

Forgotten password

If you have forgotten or lost your system password, please contact SMA Service Line (see Chapter 14 "Contact" (page 84)).

39. Move the selection frame to "System password" by turning the button.
    ☑ The field "System password" becomes dark.
40. Press the button.
    ☑ The input page appears.



41. Enter the system password for users.

←	Arrow: deletes the character which was entered last.
✕	Cross: cancels the input action.
✓	Check mark: the system password is saved.

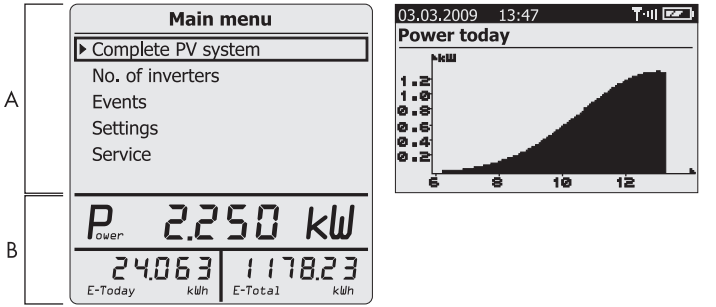
42. Select the check mark to save the entered system password.
    ☑ The list of connected devices is displayed.
43. Select "OK".
    ☑ The first chart for the complete PV system, "Power today", is displayed.

☑ The Sunny Beam is now in operation.

6 Operation

6.1 Display

The Sunny Beam display is divided into two sections. The top section contains the menu and chart view, the lower section contains the power and energy display.



A	Menu and chart view
B	Power and energy display

When the Sunny Beam attempts to establish a connection to the inverters in order to retrieve the current data, the hourglass appears in the middle of the display.

6.1.1 Switching on the display/calling up the main menu

Switching on the display/calling up the main menu

You can switch on the display by pressing or turning the button. The Sunny Beam opens the first chart, "Power today", in the chart view for the complete system. The chart view is described in Chapter 6.3 "Chart view" (page 33).

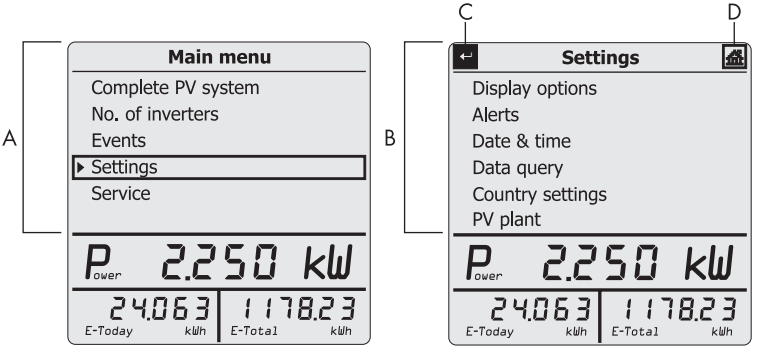
You can switch from the chart view to the main menu by pressing the button. After 3 minutes, the Sunny Beam will always switch from the menu to the chart "Power today" for the complete system automatically, unless the display switches off automatically first.

The display switches off automatically

The Sunny Beam will automatically switch off the display after being idle for 1 minute, to save energy. You can change this duration as described in Chapter 6.8.2 "Changing the display switch-off" (page 47).

6.2 Menu

Using the menu, you can change settings on the Sunny Beam and call up information about your complete PV system and about the individual inverters.



A	Main menu	
B	Submenu (example page)	
C		Arrow icon: go backwards in the menu.
D		House icon: go straight to the main menu.

An overview of the whole menu is depicted in Chapter 8 "Menu overview" (page 72).

6.3 Chart view

The Sunny Beam can visualize the data for the complete system and for each individual inverter in charts. The following charts exist:

- Power today

  When the chart "Power today" is open, the Sunny Beam will continuously query the current power and total energy yield (E-Total) This query is called "Live query". You can set the duration for which the Sunny Beam should perform the live query, for more information refer to Chapter 6.9.2 "Changing the live query duration" (page 50).
- Power yesterday
- Yield values of last 31 days
- Yield values of last 12 months
- Specific annual yield
- Revenue
- CO_2 avoided

SMA *Bluetooth* piggy-back

If you are using the SMA *Bluetooth* piggy-back, the inverter may not have switched on in the morning, which is why the chart "Power today" may still display the data from yesterday.

For PV systems with SMA *Bluetooth* piggy-back and inverters with integrated *Bluetooth*, the values for the inverters with SMA *Bluetooth* piggy-back will not be displayed for the complete system until these inverters are switched on.

6.3.1 Calling up the chart Complete PV system

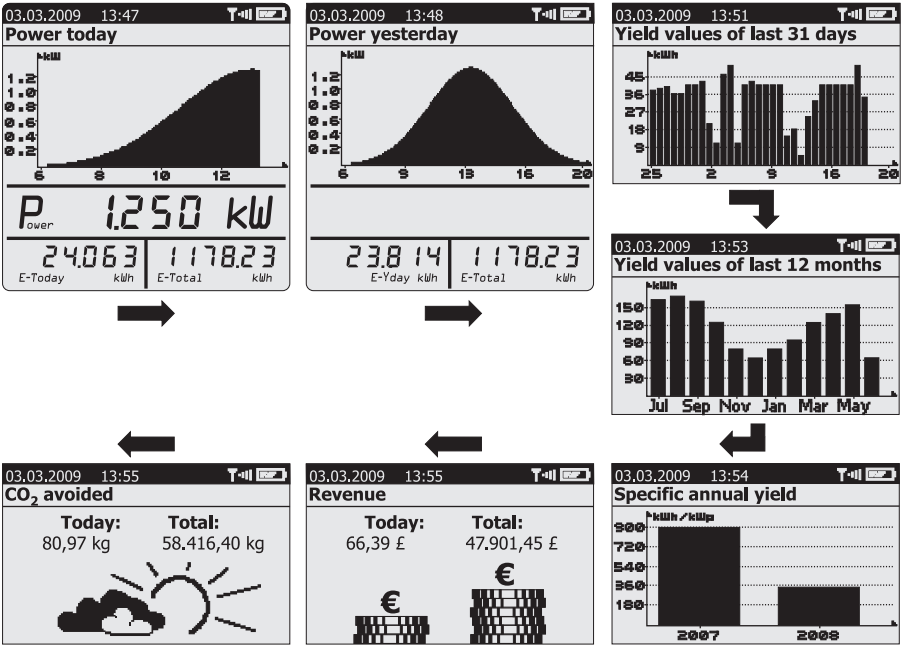
1. Select "Complete PV system" in the main menu.
   ☑ The first chart, "Power today", is displayed.
2. Turn the know to see the next chart for the complete system.

☑ The chart view for the complete system is displayed.

To return to the main menu, press the button.

Complete PV system

When you call up the chart "Power yesterday", the power and energy display will switch from "E-Today" (PV system energy today) to "E-Yday" (PV system energy yesterday).



6.3.2 Calling up the chart No. of inverters

The Sunny Beam can visualize the data of each individual inverter graphically. How to call up the chart view for an inverter:

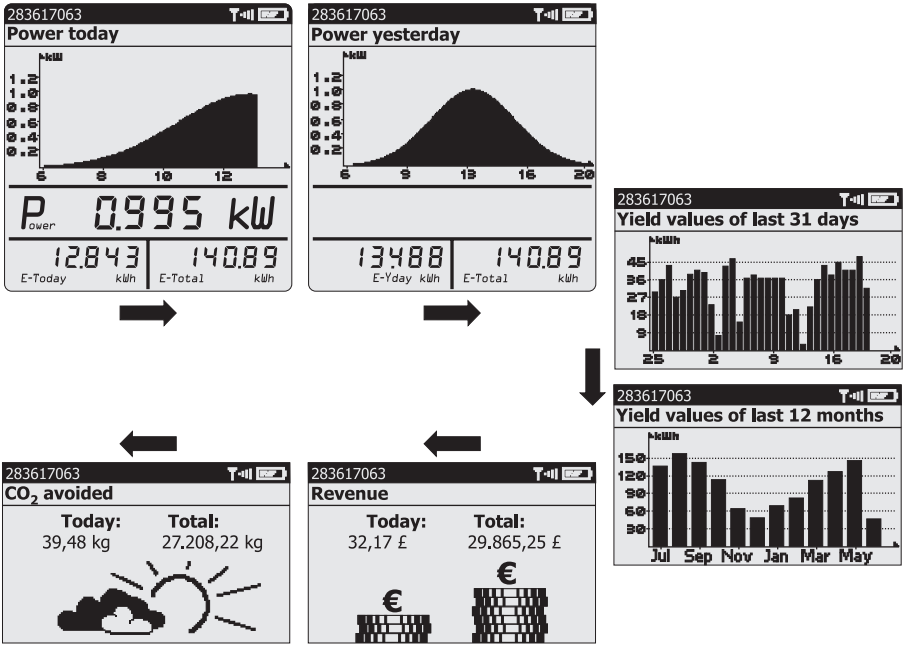
1. Select "inverter" in the main menu.
   ☑ The list of inverters appears.
2. Select an inverter.
   ☑ The first chart, "Power today", is displayed.
3. Turn the button to view the next inverter chart.

☑ The chart view of an inverter is displayed.

To return to the menu, press the button.

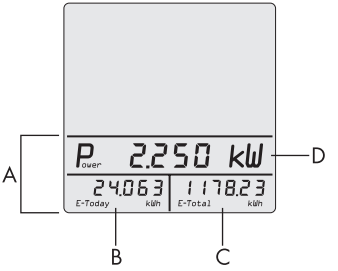
Individual inverters

When you call up the chart "Power yesterday", the power and energy display will switch from "E-Today" (PV system energy today) to "E-Yday" (PV system energy yesterday).



6.4 Power and energy display

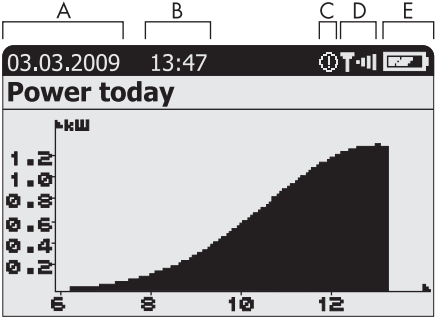
In the power and energy display you can view the energy and power values of your PV system. In the power and energy display is displayed in the chart view while the Sunny Beam is retrieving data from the inverters (data query, live query) and for 60 seconds following the query. The power value is blanked out after 60 seconds, since the data are no longer valid. The power and energy display is never shown when the menu is open.



A	Power and energy display		
		data displayed in the chart view for the complete PV system:	data displayed in the chart view for individual inverters:
B	E-Today	PV system energy today	Inverter energy today
	E-Yday	PV system energy yesterday	Inverter energy yesterday
C	E-Total	Total energy yield of the PV system	Total energy yield of the inverter
D	Power	Current AC power of the PV system	Current AC power of the inverter

6.5 Symbols in the chart view

The chart view shows date, time and symbols. The symbols are explained in this chapter.

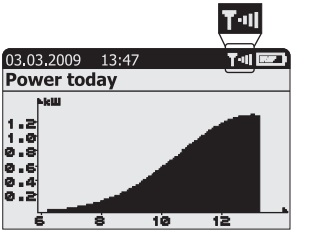


A	Date	Section 6.13
B	Time	
C	• Symbol for recent or unread warnings. • Symbol for recent or unread faults. • If there are no unread warnings or faults, no symbol will be displayed.	Section 6.5.3
D	Symbol for the connection quality	Section 6.5.1
E	Battery symbol which indicates the battery state of charge	Section 6.5.2

6.5.1 Symbol for the connection quality

The symbol for connection quality indicates whether the Sunny Beam is connected to a device in your PV system and the quality of this connection.

When the Sunny Beam is establishing a connection, this indicated by the following symbol:

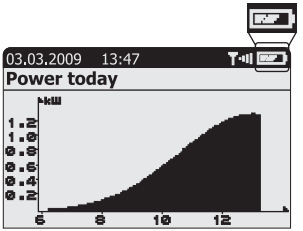


Symbol	Connection quality
	very good
	good
	unreliable
	critical
	none

A larger display of the connection quality and the serial number of the device via which the Sunny Beam is connected to the complete PV system can be found in the menu "Service > Diagnosis > Connection quality" (Chapter 6.10.1 "Checking the connection quality" (page 52)).

6.5.2 Battery symbol/Charging the batteries

The battery symbol indicates the state of charge of the Sunny Beam batteries. If the state of charge of the batteries is too low, a short acoustic signal will sound as soon as you use the Sunny Beam. In addition, a message will appear on the display.



Symbol	Meaning
	The battery is fully charged.
	The battery is no longer fully charged.
	The battery is empty.

If you are charging the batteries via the Sunny Beam USB connection, the Sunny Beam will visualize the charging process by displaying the battery symbols one after the other.

Charging the batteries when there is sufficient daylight

Put the Sunny Beam in a place with as much light as possible, with direct sunlight if possible, so that there is sufficient light for the solar cell.

Charging the batteries when there is insufficient daylight

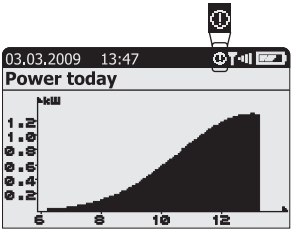
Connect the Sunny Beam to a USB port on the computer with the USB connection cable which is delivered with the Sunny Beam. If no computer is available, use the USB plug-in power supply. The USB plug-in power supply is not included in the scope of delivery (see Chapter 13 "Accessories" (page 83)).

USB hubs

When using a USB hub to connect to the computer, only use self-powered USB hubs.

6.5.3 Fault and warning symbol

The Sunny Beam indicates faults or warnings relating to the devices by displaying the fault or warning symbol in the chart view.



You will find details on the fault or warning in the menu "Events" (see Chapter 6.6 "Calling up events" (page 43)). As soon as you call up the menu "Events", the symbol will no longer be shown on the display.

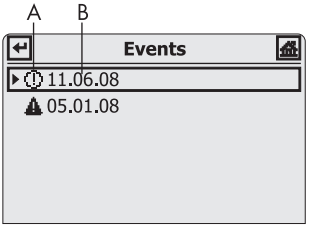
If there are no unread warnings or faults, no symbol is displayed.

Symbol	Meaning
Warning	A fault may occur in the foreseeable future. The warning symbol is, for example, displayed if there is a frequent grid overvoltage.The warning symbol is, for example, displayed if there is a frequent grid overvoltage. • The symbol appears in the display for the complete PV system and the inverters. • The warning is entered in the list under "Events".
Fault	A fault has occurred. The fault symbol is displayed if an inverter requires external help (from an installer) in order to function properly. • The symbol appears in the display for the complete PV system and the inverters. • The fault is entered in the list under "Events". • An alarm sounds until the user turns or presses the button (6.7.1 "Set/disable alarm for faults" (page 46)).

6.6 Calling up events

The Events menu lists the 25 most recent events of the devices. If a warning or a fault has occurred, the Sunny Beam displays the fault or warning symbol in the chart view (see Chapter 6.5.3 "Fault and warning symbol" (page 42)).

Information in the Events menu

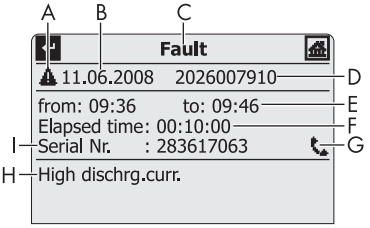


A	Event symbol (warning/fault)
B	Date of the event

1. Select "Events".
2. Select the event for which you wish to see detailed information.

☑ The details of the selected event are displayed.

Details of an event



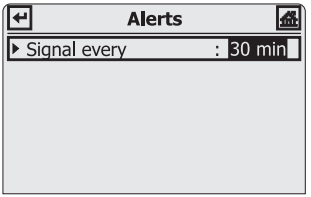
A	Symbol of the event (warning/fault)
B	Date of the event
C	Event name (warning/fault)
D	Name or serial number of the device where the event occurred.
E	• Start time ("since:"), if the event has not yet ended or the end time is not known. • Start time to end time ("from: to:"), if the event has ended. • End time ("to:"), if the event has ended and the start time is unknown.
F	• Duration of the event in hours : minutes : seconds • "–:–:–", if the event has not yet ended or the duration could not be calculated because the start time is unknown.
G	Symbol for faults. Contact your installer.
H	Event message
I	Serial number of the device where the event occurred.

6.7 Sunny Beam alarms

The Sunny Beam has a buzzer which emits an alarm when a "Fault" event occurs or when the battery state is too low.

Alarm	Repetition	Meaning
1 long signal (lasts for 3 seconds)	Adjustable, see Chapter 6.7.1	The event "Fault" has occurred. (Chapter 6.6)
1 short signal (lasts for 0.5 seconds)	Once every ten minutes until the display switches off after the set duration (Chapter 6.8.2 "Changing the display switch-off" (page 47)).	The state of charge of the battery is too low. Charge the batteries as described in Chapter 6.5.2
3 short signals in immediate sequence		The state of charge of the batteries is so low that reliable operation is impossible. The Sunny Beam is switched off. Charge the batteries as described in Chapter 6.5.2

6.7.1 Set/disable alarm for faults



If the event "Error" occurs, a 3 second long alarm will sound. The alarm is repeated after a certain interval set by the user until you press the button, however, not for more than 24 hours.

1. Select "Settings > Alerts".
2. Select "Signal every:".
3. Set the interval.

   The default setting is 30 minutes. To disable the alarm, select "- - -".

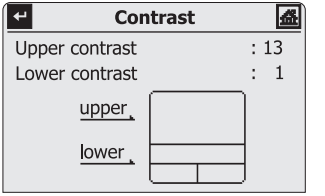
☑ The alarm for faults has been set.

6.8 Display settings

6.8.1 Changing the contrast

1. Select "Settings > Display options > Contrast".
2. Select "Upper contrast" or "Lower contrast".
3. Set the contrast.

☑ The contrast is changed.



6.8.2 Changing the display switch-off

The Sunny Beam will automatically switch off its display after being idle for 1 minute to save energy. You may adjust the duration or set the display to always remain switched on (Setting "-").

1. Select "Settings > Display options > Display off after:".
2. Set the interval.

☑ The switch-off has been set up.

Power consumption

The longer the display remains switched on, the higher the power consumption of the Sunny Beam.

6.8.3 Setting the coefficients of balance

The coefficients of balance are used to calculate revenue and CO_2 avoided.

Revenue/kWh

The coefficient used for calculating revenue is the earnings per kWh.

CO_2/kWh

The coefficient used for calculating CO_2 avoided depends on the energy mix of the location where the PV system is installed. You can find out how high the CO_2 coefficient of the location is by asking the power supplier.

You will find further information on the CO_2 coefficient in the download area of www.SMA.de/en.

1. Select "Settings > Display options > Coefficients of balance".
2. Select "Revenue/kWh:" or "CO2/kWh:".
3. Set the coefficient.

☑ The coefficients of balance are now set.

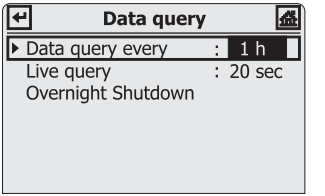
6.9 Data query

6.9.1 Changing the data query frequency

You may change the frequency at which the Sunny Beam is to query data from the inverters. The default setting is 1 hour.

1. Select "Settings > Data query > Data query every:".
2. Set frequency.

☑ The frequency for data queries has been changed.



Power consumption

The higher the data query frequency is, the more energy the Sunny Beam will consume. One query per day is in principle sufficient, since the data is buffered in the inverter.

Preset Overnight Shutdown

As the default setting, the Sunny Beam data query from inverters is shut down over night, because the solar inverters do not supply at night and therefore do not generate any data. If you are using a wind inverter from SMA Solar Technology, you need to disable the Overnight Shutdown (Chapter 6.9.3 "Disabling the Overnight Shutdown" (page 51)).

6.9.2 Changing the live query duration

The live query only begins if you call up the chart "Power today" for the complete PV system or for one of the inverters.

In a live query, the Sunny Beam reads the current values for power and total energy yield ("Power" and "E-Total" in the Sunny Beam power and energy display) in that precise moment. This way, you can see the current power live and, for example, observe the effect of a passing cloud on your PV system.

The values for "E-Today" are not updated during the live query. These data are updated by Sunny Beam once per hour according to the default setting (Chapter 6.9.1 "Changing the data query frequency" (page 49)).

You can change the duration of the live query. The default setting is 20 seconds.

1. Select "Settings > Data query > Live query:".
2. Set the interval.

☑ The duration of the live query has been changed.

Power consumption

The longer the duration of the Sunny Beam live query, the more power the Sunny Beam will consume.

6.9.3 Disabling the Overnight Shutdown

As the default setting, the Sunny Beam data query from inverters is shut down over night, because the inverters do not supply at night and therefore do not generate any data. Only disable the Overnight Shutdown if you are using a Windy Boy (wind inverter SMA Solar Technology).

1. Select "Settings > Data query > Overnight Shutdown".
2. Remove the check mark from the "active" box.

☑ The Overnight Shutdown is now disabled.

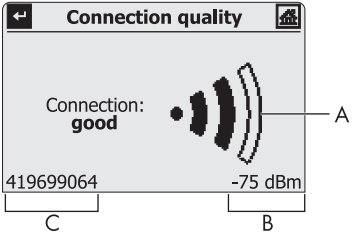
To prevent the batteries from discharging when the overnight shutdown is disabled, connect the Sunny Beam to the computer using the USB connection cable supplied with the Sunny Beam. The computer will supply the batteries with power. The computer needs to remain switched on.

Alternatively, you can connect the Sunny Beam to the USB plug-in power supply, which supplies the batteries with power via a socket. The USB plug-in power supply is not included in the scope of delivery. You can order the plug-in power supply as an accessory from SMA Solar Technology, see Chapter 13 "Accessories" (page 83).

6.10 Service functions

6.10.1 Checking the connection quality

In the menu "Service > Diagnosis > Connection quality", you can check the connection quality of the connection from the Sunny Beam to the device via which the Sunny Beam is connected to the complete PV system.



A	The connection quality as a symbol
B	The connection quality in decibel, relating to 1 mW
C	Serial number of the device with SMA *Bluetooth*, to which the Sunny Beam is connected.

Very high power consumption

When the menu "Connection quality" is displayed, the Sunny Beam is continuously retrieving new data from the inverters and will not switch off automatically. The power consumption of the Sunny Beam is therefore very high.

Levels of connection quality

Symbol	Connection quality	Decibel in relation to 1 mW
	very good	more than -68 dBm
	good	-82 to -68 dBm
	unreliable	-90 to -82 dBm
	critical	-100 to -90 dBm
	none	less than -100 dBm

6.10.2 Accessing device information

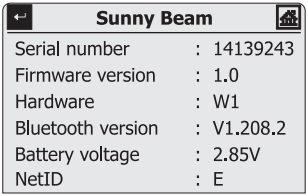
1. Select "Service > Diagnosis > Device information".
2. Select "Sunny Beam" or one of the inverters.

☑ The information about the selected device is displayed.

Die Geräte-Information enthält folgende Details:

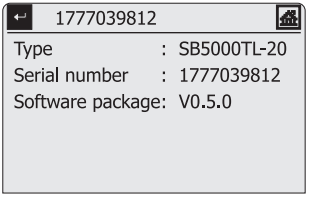
Sunny Beam

- Serial number
- Firmware version
- Hardware
- *Bluetooth* version
- Battery voltage
- NetID



Inverter

- Type
- Serial number
- The software package of the inverter with integrated *Bluetooth* or of the SMA *Bluetooth* piggy-back with a retrofitted *Bluetooth*.



6.10.3 Performing an update

When the Sunny Beam is updated, all the settings and data will be kept.

To perform an update, you will need:

- A computer with an Internet connection, in order to download the update file from the Internet.
  Supported computer operating systems, see Chapter 7.1 "System requirements" (page 70).
- Supplied USB connection cable

1. Download the update file, which can be found in the download area of www.SMA.de/en.
   Do not rename the update file, or the Sunny Beam will not recognize the file.
2. Select "Service > Update" in the Sunny Beam main menu.
3. Connect the Sunny Beam to the computer with the supplied USB connection cable.
   ☑ Sunny Beam will sign on to the computer as an inverter. Two drives are added to the computer. One drive contains the folder "UPDATE".

The Sunny Beam must remain connected to the computer until the update is completed!

Do not unplug the USB connection cable from the Sunny Beam and do not switch the computer off until the update is complete. If you do so, the Sunny Beam will not be able to perform the update.

4. Copy the update file to the folder "UPDATE". The existing file can be overwritten.
5. Select "OK" on the Sunny Beam.
   ☑ The menu "Update" is displayed.

6. Remove the Sunny Beam using the icon "Safely Remove Hardware" in the taskbar on the computer, as the update cannot be performed correctly otherwise. The icon "Safely Remove Hardware" as displayed in the operating system Windows XP is depicted on the right.

   The Sunny Beam must remain connected to the computer via the USB connection cable.

7. To start the update, confirm the request by pressing "Yes".

   ☑ The update starts.

   As soon as the update is completed, a message is displayed.

8. Select ">>".

   ☑ The first chart for the complete PV system, "Power today", is displayed.

9. Unplug the USB connection cable from the computer and the Sunny Beam.

☑ The update is complete.

6.10.4 Resetting the Sunny Beam

Resetting the Sunny Beam will restore the factory settings on the Sunny Beam.

All system data, CSV files and settings in the Sunny Beam are erased when it is reset!

If required, save the CSV files on your computer, as described in Chapter 7.2 "Copying system data to the computer" (page 70). After the Sunny Beam is reset, you need to commission it again.

1. Select "Service > Reset".
2. To perform the reset, confirm the request with "Yes".
   ☑ The Sunny Beam performs the reset. This may take a few minutes. When the reset is complete, the Sunny Beam is switched off.

☑ The reset is complete.

6.11 System settings

6.11.1 Calling up the list of connected devices

You can call up a list of all inverters which are connected to the Sunny Beam.

1. Select "Settings > PV plant > Devices connected".

☑ List of connected devices appears.

Inverters for which the correct system password has been entered on the Sunny Beam are marked with a check mark (✓).

Inverters for which an incorrect system password has been entered are marked with a padlock (🔒).

Padlock symbol for inverters with SMA *Bluetooth* piggy-back

For inverters with SMA *Bluetooth* piggy-back, the padlock symbol is displayed when the inverter switches off at night. Since the Sunny Beam cannot establish a connection to this inverter, it interprets this as an incorrectly entered password.

As soon as the inverter is switched on in the morning, the padlock will disappear.

6.11.2 Entering the system password

If you have modified the system password of the inverter with Sunny Explorer after commissioning the Sunny Beam, you can enter the new system password in the Sunny Beam without having to commission it again.

Proceed as follows:

1. Select "Settings > PV plant > Devices connected".
   ☑ The list of devices that are connected to Sunny Beam is displayed.
2. Perform the steps from the section "Enter the new system password in the Sunny Beam" (page 29).

6.11.3 Repeating the system search

If you repeat the system search, your system data, CSV files and settings will be kept in the Sunny Beam. Data from inverters that have been added to the PV system will be retrieved from the day before yesterday onwards and saved in the Sunny Beam.

Resetting before a change of system

If you wish to detect a different PV system with the Sunny Beam, you need to reset the Sunny Beam first. This will erase the data from the previously detected PV system.

No search for *Bluetooth* PV systems with NetID 1

The Sunny Beam cannot search for *Bluetooth* PV systems with the NetID 1. Only NetIDs from 2 to 9 and from A to F are possible.

1. Select "Settings > PV plant > New plant search".
2. Select "Start detection" to start the system search.
   ☑ The system search will begin.

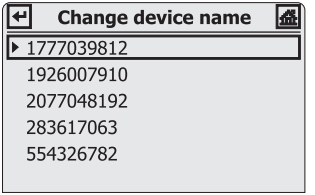
If	Then
A free NetID is already set on the devices in your *Bluetooth* PV system.	Perform the steps from the section "Determining a free NetID" (page 21).
No free NetID has been set on the devices in your *Bluetooth* PV system.	Perform the steps from the section "Search for your own Bluetooth PV system" (page 25).

6.11.4 Change device name

The device names of the detected inverters are displayed as serial numbers in the Sunny Beam. You can change the serial numbers to a descriptive device name, in order to be able to better distinguish between the inverters in the Sunny Beam. The names you give the devices are only shown on the Sunny Beam and will not be transferred to the inverters or displayed on any other communication device (e.g. Sunny Explorer).

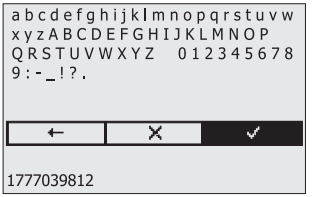
1. Select "Settings > PV plant > Change device name".

   ☑ The list of devices that the Sunny Beam manages is displayed.



2. Select the serial number or a previously assigned device name.

   ☑ The input page appears.



←	Arrow: deletes the character which was entered last.
☒	Cross: cancels the input action.
☑	Check mark: the entered device name is saved.

3. Delete the serial number or previously assigned device name using the arrow.
4. Enter a new device name using the characters.

Umlauts in device names are not displayed correctly in the CSV files.

5. To save the device name, select the check mark.

☑ The device name has been changed.

6.11.5 Adjusting the energy meter when switching devices

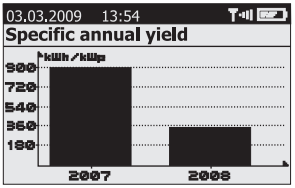
1. Select "Settings > PV plant > Offset energy meter".
2. Select the new inverter.
3. Set the revenue of the previous inverter.

☑ The energy meter has been adjusted.

6.11.6 Setting the maximum plant power in kWp

The plant power in kWp (kilowatt peak) is the maximum possible performance of the PV system and serves to compare PV systems of different sizes with one another. You can find out the value in kWp from your installer.

The Sunny Beam requires the plant power in kWp to calculate the specific annual yield (kWh/kWp). The specific annual yield is one of the charts displayed by the Sunny Beam, depicted to the right.



The Sunny Beam can display the plant performance for the last 20 years. The more years are included, the more narrow the columns will be.

Calculating the specific annual yield with the Sunny Beam.

The Sunny Beam calculates the specific annual yield as follows:

- kWh (kilowatt hour) divided by kWp (kilowatt peak)

The Sunny Beam calculates the value for kWh per year by adding the daily power (E-Day) from the first to the last day of the year:

- E-Day1 + E-Day2 + E-Day3 + all E-Day values until 31 December of the year

Requires data from January to December

The specific annual yield is only representative if data from the whole year is used. If your PV system with the Sunny Beam was commissioned in July, for instance, data from the previous months are lacking.

1. Select "Settings > PV plant > Plant Power in kWp".
2. Set the plant power in kWp.

☑ The plant power in kWp has been set.

When expanding your *Bluetooth* PV system

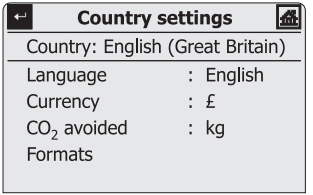
If your *Bluetooth* PV system is to be expanded with more PV modules, you need to set the new plant power in kWp on the Sunny Beam. The new inverters can be added to the Sunny Beam by performing a new system search (see Chapter 6.11.3 "Repeating the system search" (page 60)).

6.12 Country settings

In the menu "Settings > Country settings", you can make country-specific settings.

If you change the country, the settings in the menu items below the line will automatically be adjuste to the country. In addition, you can change the settings manually.

- Country
  - Language
  - Currency
  - CO_2 avoided
  - Formats
    - Decimal separator
    - Date format
    - Timestamp format



6.12.1 Changing the language

1. Select "Settings > Country settings > Country".
2. Set the language.

☑ The language has been changed.

6.12.2 Changing the currency

1. Select "Settings > Country settings > Currency".
2. Set the currency.

☑ The currency has been changed.

6.12.3 Changing the unit of CO_2 avoided

1. Select "Settings > Country settings > CO_2 avoided".
2. Set the unit.

☑ The unit of CO_2 avoided has been changed.

6.12.4 Changing the decimal separator

1. Select "Settings > Country settings > Formats".
2. Select "Decimal separator" and change the setting.

☑ The decimal separator has been changed.

The decimal separator in the power and energy display (Chapter 6.4) on the Sunny Beam cannot be changed and will always be a point.

6.12.5 Changing the date format

Abbreviations: D= day, M= month, Y= year

1. Select "Settings > Country settings > Formats".
2. Select "Date format" and change the setting.

☑ The date format has been changed.

6.12.6 Changing the timestamp format

Possible settings: 12h or 24h (e.g. 6:00 pm or 18:00)

1. Select "Settings > Country settings > Formats".
2. Select "Timestamp format" and change the setting.

☑ The timestamp format has been changed.

6.13 Changing the date and time

Inverters with SMA *Bluetooth* piggy-back

If you use inverters with SMA Bluetooth piggy-backs, you must set the correct values for date, daylight saving time, time and time zone. If you reset the time after commissioning, the data associated with the time difference will be deleted from the inverter. Please note that the time may also be reset if you change the settings for time zone or daylight saving time.

1. Select "Settings > Date & time".
2. Select "Date:" or "Time:" and change the setting.

☑ The date and time are changed.

6.14 Activating/deactivating daylight saving time

Inverters with integrated SMA *Bluetooth* piggy-back

If you use inverters with SMA Bluetooth piggy-backs, you must set the correct values for date, daylight saving time, time and time zone. If you reset the time after commissioning, the data associated with the time difference will be deleted from the inverter. Please note that the time may also be reset if you change the settings for time zone or daylight saving time.

1. Select "Settings > Date & time".
2. Set or remove a checkmark in the box for "Daylight saving time". When there is a checkmark in the box, daylight saving time is activated. The time settings on the Sunny Beam and on the inverters will switch to daylight saving time.

☑ Daylight saving time is activated / deactivated.

6.15 Changing the time zone

Inverters with integrated SMA *Bluetooth* piggy-back

If you use inverters with SMA *Bluetooth* piggy-backs, you must set the correct values for date, daylight saving time, time and time zone. If you reset the time after commissioning, the data associated with the time difference will be deleted from the inverter. Please note that the time may also be reset if you change the settings for time zone or daylight saving time.

1. Select "Settings > Date & time".
2. Select "Time zone" and change the setting.

☑ The time zone is changed.

7 Managing system data

At the end of each day, the Sunny Beam saves the new total energy yield (E-Total) that the PV system has produced. The Sunny Beam saves the total energy yield for the complete PV system and for each inverter. In addition, a 10-minute average is calculated.

A CSV file is stored for each day. No monthly or annual files are generated. For inverters with integrated SMA *Bluetooth* piggy-back, it can take as long as until noon the next day, before the Sunny Beam can save the CSV files.

The Sunny Beam saves the total energy yield for at least 100 days. The storage volume depends on the number of inverters. If the memory in the Sunny Beam is full, the oldest data is overwritten. How to copy the PV system data from the Sunny Beam to your computer is described in Chapter 7.2 "Copying system data to the computer" (page 70).

Values for daily yield (E-Today) and Power.

You can calculate the values for daily yield and power using the total energy yield (E-Total), which is saved by the Sunny Beam, with Excel for example.

7.1 System requirements

Supported operating systems for connecting the Sunny Beam to the computer:

- Windows XP, Windows Vista
- Linux (SUSE, RedHat, Ubuntu, Debian etc.) with support for USB and mass storage devices
- Mac OS X, 10.3 and later.
- Mac OS classic, 8.6 and later with support for USB

7.2 Copying system data to the computer

The Sunny Beam signs on to the computer as an inverter. This means that you can copy the system data to the computer as with a USB memory stick.

To copy the system data to the computer, proceed as follows:

1. Connect the Sunny Beam to the computer with the supplied USB connection cable.
   ☑ Sunny Beam signs on as an inverter. A drive is added to the computer. The drive contains the folder "SBEAM".
2. Open the "SBEAM" folder and copy the CSV data to the computer.

☑ The system data are now saved on the computer.

7.2.1 CSV format

The CSV files can be opened in Microsoft Excel and used to create charts.

File name

The name of the file is always the date that the data was generated by the inverter. The sequence is always year, month, date. The separator is a hyphen.

YY-MM-DD = Example: 09-07-15.csv

Data format in the file

Individual data are separated by a semicolon in the file. The decimal separator and the timestamp format in the files are determined by the country settings. For information on how to change the decimal separator and the timestamp format, please refer to Chapter 6.12.4 "Changing the decimal separator" (page 66) and Chapter 6.12.6 "Changing the timestamp format" (page 66).

Umlauts in device names are not displayed correctly in the CSV files.

8 Menu overview

Complete PV system			
Inverter			
Events			
Settings	Display options	Contrast	Upper contrast Lower contrast
		Display off after	Upper display Lower display
		Coefficients of Balance	Revenue/kWh CO_2/kWh
	Alerts	Signal every	
	Date & time	Date	
		Daylight saving time	
		Time	
		Time zone	
	Data query	Data query every	
		Live query	
		Overnight Shutdown	active
	Country settings	Country	
		Language	
		Currency	
		CO_2 avoided	
		Formats	Decimal separator Date format Timestamp format
	PV plant	Connected devices	
		New plant search	
		Change device name	
		Offset energy meter	
		Plant power in kWp	
Service	Diagnosis	Connection quality	
		Device information	
	Update		
	Reset		

9 Maintenance and Care

9.1 Maintenance

9.1.1 Replacing the batteries

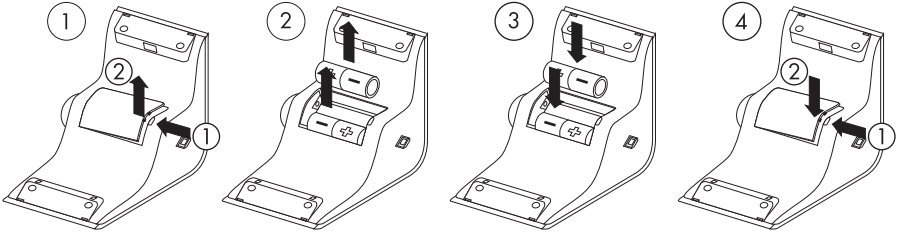
The batteries must be replaced when they no longer charge properly and this adversely affects the operation of the Sunny Beam.

WARNING!

Risk of damage to the Sunny Beam due to unsuitable batteries or batteries with different states of charge.

- Batteries of the wrong type may leak into the Sunny Beam. You must only use rechargeable nickel-metal hydride batteries (NiMH), type Mignon (AA) with low self-discharge, e.g. Eneloop batteries (see Chapter 13 "Accessories" (page 83)).
- Batteries with different states of charge damage the Sunny Beam. Always use and replace the batteries in pairs.

1. Replace the batteries as illustrated below.



2. Press the button to switch the Sunny Beam on.

   ☑ The Sunny Beam checks whether an update file has been saved on the Sunny Beam.

If	Then
There is an update file on the Sunny Beam.	The Sunny Beam runs the update.
There is no update file.	The Sunny Beam starts up.

☑ The chart view for the complete system is displayed. The batteries have been replaced.

Make sure that the time and date settings of the Sunny Beam are correct. If the settings are incorrect, change time and date (Chapter 6.13 "Changing the date and time" (page 67)).

9.2 Care

WARNING!

Risk of damage to the Sunny Beam due to water penetrating the device and incorrect cleaning.

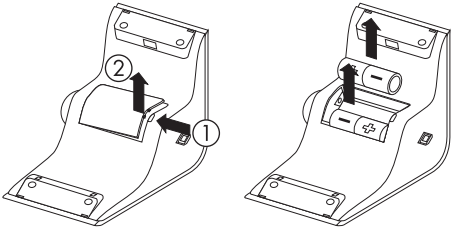
The Sunny Beam is not waterproof.

- Only use a moist, soft cloth for cleaning purposes (without harsh or abrasive detergents).

10 Decommissioning

10.1 Decommissioning the Sunny Beam

Remove the batteries from the Sunny Beam as illustrated below.



10.2 Disposing of the Sunny Beam

Dispose of the Sunny Beam at the end of its service life in accordance with the disposal regulations for electronic waste which apply at the installation site at that time. Alternatively, send it back to SMA Solar Technology with shipping paid by sender, and labeled "ZUR ENTSORGUNG" ("for disposal") (the address can be found on Page 84).

10.3 Disposing of the batteries

Dispose of the batteries at the end of their service life in accordance with the disposal regulations for batteries which apply at the installation site at that time.

You can order new batteries for the Sunny Beam from SMA Solar Technology (see Chapter 13 "Accessories" (page 83)).

11 Troubleshooting

Problem	Cause and solution
System search The Sunny Beam does not list the NetID of your *Bluetooth* PV system.	• There is no device from your *Bluetooth* PV system within the radio range of your Sunny Beam. – Place the Sunny Beam closer to a device in your *Bluetooth* PV system. If this is not possible, use the SMA *Bluetooth* repeater to bridge the radio gap.
	• The devices in your *Bluetooth* PV system are not in operation. – Determine a free NetID, as described in the section "Determining a free NetID" (page 21), and then commission the devices as described in the respective manual.
	• The NetID 0 (*Bluetooth* off) or NetID 1 were possibly set on the devices. The Sunny Beam cannot detect devices with NetID 1. – Set the free NetIDs in your *Bluetooth* PV system to the inverters and any available SMA *Bluetooth* repeaters, as described in the respective manual. If no NetID has been determined for the *Bluetooth* PV system, determine a free NetID as described in the section "Determining a free NetID" (page 21).

Problem	Cause and solution
Devices found The Sunny Beam does not list all inverters in your *Bluetooth* PV system.	• For PV systems with many devices, it could take a while for all of the devices to become integrated in the *Bluetooth* network. – Repeat the search.
	• The NetID of your *Bluetooth* PV system has not been set on the missing inverters. – Check whether the NetID of your *Bluetooth* PV system has been set on the inverters and SMA *Bluetooth* repeaters, as described in the respective manual.
	• Sunny Beam was not able to establish a radio connection to the missing inverters. – Check the connection quality of the inverters and SMA *Bluetooth* repeaters, as described in the respective manual. The connection quality of each device must be at least good.
The Sunny Beam lists your inverters as well as inverters from other system.	• There is another *Bluetooth* PV system within the radio range of the Sunny Beam, which uses the same NetID as your *Bluetooth* PV system. – By determining a free NetID this should not occur. Determine a free NetID again, as described in the section "Determining a free NetID" (page 21).

Problem	Cause and solution
Radio connection The radio connection to the Sunny Beam is unreliable.	• The Sunny Beam is too far away from your *Bluetooth* PV system, or the radio connection between the Sunny Beam and your *Bluetooth* PV system is subject to interference. The reason for the interference could be, for example, walls or ceilings which weaken the radio waves. – Place the Sunny Beam closer to a device in your *Bluetooth* PV system. If this is not possible, use the SMA *Bluetooth* repeater to bridge the radio gap.
Connection to the computer The computer displays a message that the USB can perform better.	• The message does not affect the functionality or speed of the Sunny Beam. – You can switch the message off, but then other USB error messages will not be displayed. Proceed as follows. These steps describe Windows XP and may be different in other operating systems. Right-click on "My Computer" and select "Device Manager". Open the "USB Controller" in the Device Manager. Right-click on the item "Host Controller". Select "Properties". Select "Advanced". Tick the box that says "Do not display USB errors".
Chart view Gaps or extreme characteristics in the chart data.	• For PV systems with the SMA *Bluetooth* piggy-back, there will be gaps in the charts if you have set a time on the Sunny Beam which precedes detection of the PV system in the Sunny Beam. Extreme characteristics will appear in this case, if you have reset the time. The reason for this is that an inverter saves the generated data together with the current time. The Sunny Beam will retrieve these data from the inverter and display them. – Do not change the time settings on the Sunny Beam more than necessary.

Problem	Cause and solution
Padlock symbol ( ) The padlock symbol is displayed, although the correct system password was entered.	• For inverters with SMA *Bluetooth* piggy-back, the padlock symbol is displayed when the inverter switches off at night. Since the Sunny Beam cannot establish a connection to this inverter, it interprets this as an incorrectly entered password. – As soon as the inverter is switched on in the morning, the padlock will disappear.
Time The time settings were not saved.	• Due to the extensive time management in your PV system, the first attempt to change the time settings may not be successful, if, for example, time has already been set using Sunny Explorer. – Check the time settings after commissioning and correct them, if required.

You can download additional information about SMA *Bluetooth* Wireless Technology from the download area at www.SMA.de/en.

12 Technical Data

Communication	
Inverter communication	*Bluetooth*
Computer communication	USB 2.0
Connections	
USB	
Max. number of devices	
Bluetooth	12
Max. communication range	
Bluetooth in the open air	up to 100 m
Power supply	
Power supply	integrated solar cell, USB connection cable, USB plug-in power supply
Number of batteries	2
Type of battery	Rechargeable nickel-metal hydride batteries (NiMH), type Mignon (AA), 1.2 V DC with low self-discharge, e.g. Eneloop
Environmental conditions for operation	
Ambient temperature	0 °C to +40 °C
Protection rating	IP20
General data	
Dimensions (W/H/D) in mm	127/75/195 (as desk-top device)
Weight	approx. 350 g (with batteries)
Mounting location	indoors
Status display	LCD

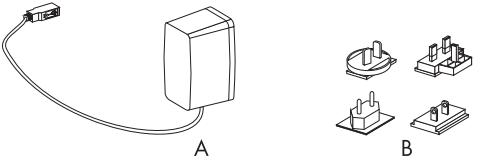
Software language	Czech, Dutch, English, French, German, Italian, Portuguese, Spanish
Features	
Display	LCD
Operation	Rotary push button
Warranty	5 years
Certificates and approvals	www.SMA.de/en
Information displayed	
General information	Time, date
System data	Live performance, power today and yesterday, total energy yield, energy today and yesterday, yield of the last 31 days, and yield of the last 12 months, specific annual yield, revenue today and total, warnings, faults
Accessories	
USB plug-in power supply	
Replacement batteries	

13 Accessories

13.1 USB plug-in power supply

The USB plug-in power supply can be used to connect the Sunny Beam to a socket, to charge the batteries via the mains instead of using the solar cell.

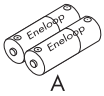
Order number: BEAM-BT-SUPPLY



Position	Quantity	Name
A	1	USB plug-in power supply
B	4	Adapter

13.2 Replacement batteries

Order number: BEAM-BT-BATTERY



Position	Quantity	Name
A	2	Eneloop rechargeable batteries

14 Contact

If you have technical problems concerning our products, contact the SMA Service Line. We need the following information in order to provide you with the necessary assistance:

- Sunny Beam hardware (see Chapter 6.10.2)
- Sunny Beam firmware version with *Bluetooth* (see Chapter 6.10.2)
- Firmware version of the SMA *Bluetooth* piggy-back in the inverter (see SMA *Bluetooth* Piggy-Back manual)
- Inverter type and serial number (see inverter manual)

SMA Solar Technology AG

Sonnenallee 1

34266 Niestetal, Germany

www.SMA.de

Serviceline

Inverters:	+49 561 9522 1499
Communication:	+49 561 9522 2499
Fax:	+49 561 9522 4699
E-Mail:	serviceline@SMA.de

The information contained in this document is the property of SMA Solar Technology AG. Publishing its content, either partially or in full, requires the written permission of SMA Solar Technology AG. Any internal company copying of the document for the purposes of evaluating the product or its correct implementation is allowed and does not require permission.

Exclusion of liability

The general terms and conditions of delivery of SMA Solar Technology AG shall apply.

The content of these documents is continually checked and amended, where necessary. However, discrepancies cannot be excluded. No guarantee is made for the completeness of these documents. The latest version is available online at www.SMA.de or from the usual sales channels.

Guarantee or liability claims for damages of any kind are excluded if they are caused by one or more of the following:

- Damages during transportation
- Improper or inappropriate use of the product
- Operating the product in an unintended environment
- Operating the product whilst ignoring relevant, statutory safety regulations in the deployment location
- Ignoring safety warnings and instructions contained in all documents relevant to the product
- Operating the product under incorrect safety or protection conditions
- Altering the product or supplied software without authority
- The product malfunctions due to operating attached or neighboring devices beyond statutory limit values
- In case of unforeseen calamity or force majeure

The use of supplied software produced by SMA Solar Technology AG is subject to the following conditions:

- SMA Solar Technology AG rejects any liability for direct or indirect damages arising from the use of software developed by SMA Solar Technology AG. This also applies to the provision or non-provision of support activities.
- Supplied software not developed by SMA Solar Technology AG is subject to the respective licensing and liability agreements of the manufacturer.

SMA Factory Warranty

The current guarantee conditions come enclosed with your device. These are also available online at www.SMA.de and can be downloaded or are available on paper from the usual sales channels if required.

Trademarks

All trademarks are recognized even if these are not marked separately. Missing designations do not mean that a product or brand is not a registered trademark.

The *Bluetooth*® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by SMA Solar Technology is under license.

SMA Solar Technology AG

Sonnenallee 1

34266 Niestetal

Germany

Tel. +49 561 9522-0

Fax +49 561 9522-100

www.SMA.de

E-Mail: info@SMA.de

© 2004 to 2009 SMA Solar Technology AG. All rights reserved

SMA Solar Technology AG

www.SMA.de